REMARKS

Claims 1, 3, 5 and 7 have been amended pursuant to instructions from the Primary Examiner to obviate the rejections under 35 U.S.C. 112. The subject matter of claims 1 and 2 has been combined.

Claims 1-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art of Figures 6-7 shown in applicant's application (herein referred to as PA) in view of Oliver et al (USP 4,690,665) and Uchiyama et al (USP 6,334,615).

MPEP section 2143.01 indicates that the prior art must suggest the desirability of the claimed invention. "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. 'The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.'" Here, it is respectfully suggested that the Examiner is improperly combining the Prior Art set forth in the instant application, the '665 Patent to Oliver et al. and the '615 patent to Uchiyama et al.

The '665 patent to Oliver et al. teaches a chain belt having links which are open to the atmosphere where the chain will be operated so apparently wear powders and the like were no concern to Oliver. No concern for fitting the members together or flexibility is expressed in Oliver et al. and this is logical because of its link style construction. In fact, Oliver does not mention flexibility.

The problem to be solved by the '615 patent to Uchiyama et al., i.e., the provision of a seal for insertion into a fixed outer race of a small ball bearing is unrelated (as understood) from the noise problem addressed by the '665 patent to Oliver et al.

The references themselves do not explicitly provide any suggestion or motivation for combining the references. Nor can any suggestion or motivation be implicitly found since the references themselves are structurally different each from the other and they are directed toward solving different problems. Nor can any suggestion or motivation be implicitly found since the references are structurally different from the instant invention and they are each directed toward solving different problems using different technology.

In *In re Kotzab*, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000) the court held that a "finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the claimed invention] to make the combination in the manner claimed" must be made. In the instant application, the Examiner has not identified a specific understanding or principle within the knowledge of the skilled artisan that would have motivated one with no knowledge of the claimed invention to make the combination in the manner claimed. Nowhere does the Examiner identify the artisan given the differences in the problems to be solved, nor does the Examiner explain the motivation for combining the structure of the Prior Art set forth in the application with the "615 patent to Uchiyama et al. and/or with the '665 patent to Oliver et al.

Assuming, arguendo, that a person of ordinary skill in some art had the three references before him/her, the Examiner has failed to identify what the art is and why the person would have the references before him/her. For example, if working in the art of Closed Cable Drag Chains why would a person of ordinary skill in that art look to Uchiyama et al. and Oliver et al. in the first place. There is no logical reason that Oliver would look at a small office bearing seal (Uchiyama et al.) Hypothetically speaking, if the inventors of the instant application had Oliver before them at the time of making the invention, Oliver et al. would be of no help or assistance because Oliver et al. merely teaches making the parts out of polymers, not two-color polymers. Uchiyama et al., on the other hand, teaches the making of bearing seals out of two-color polymers. One of the most important problems to be solved by the instant invention was the flexibility problem so as to enable easy assembly and maintenance of the cable drag chain. See, the instant specification page 12, lns. 1-4 and page 20, lns. 5-8 wherein the need for flexible connection portions, flexible opening/closing lids, and a flexible outer frame is identified. The manufacture of these components out of two-color polymer resins was not obvious at the time the invention was made. There is no reason to combine any of the three references and doing so constitutes hindsight reconstruction of the instant invention.

It must be remembered that a person of ordinary skill in the art is a person that would not innovate. A person of ordinary skill in the art is one who thinks along the line of conventional wisdom and does not take to innovate. *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 454, 227 USPQ 293 (Fed. Cir. 1985). None of the three references teaches or suggests the use of flexible two-color resins in intermediate frame bodies. Nor do any of the references teach or suggest the use of a softer resin in the front and rear connection portions and the front and rear bend limiting portions of the opening/closing lid member.

Reconsideration of amended claims 1, 3, 5 and 7 is respectfully requested.

For the foregoing reasons, reconsideration of claims 1, 3, 5 and 7 is requested.

Please enter specification replacement sheets 4, 5, 18, 19, 20 and 21. These replacement sheets are submitted as references to the claims in the specification have been deleted in view of the amendment of some of the claims and the cancellation of some of the claims.

The undersigned invites a telephone call from the Examiner if for any reason it would expedite the application.

Respectfully submitted,

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noises such as clatter sounds, sliding contact sounds and the like, which tend to occur during the holding and guiding the cable or hose, and wherein the assembling, maintenance and repairing of the chain are easy and early wear of the cable or hose can be suppressed.

Means for Solving the Problems

To solve the above-mentioned problems a closed cable drag chain ~~according to claim 1,~~ in which each of a number of intermediate frames includes an intermediate frame body provided with a cable holding groove inside and having connecting portions on the front and rear portions, and an opening/closing lid member, which is fitted to said cable holding groove, and wherein adjacent upper open end surfaces of the adjacent intermediate frames, which are brought into contact with each other on an articulated outer peripheral side of the chain to holds a straightly extended position and adjacent lower open end surfaces of the adjacent intermediate frames, which are brought into contact with each other on an articulated inner peripheral side of the chain while circulating to hold a required articulated position, are formed so that said intermediate frames are articulately connected through said connecting portions, and cable or the like is inserted into the chain in a tubular fitted state where removable frames fit-cover the connecting portions between said adjacent intermediate frames to close the respective connecting spaces between said adjacent intermediate frames, whereby the cable or the like is held and guided, is characterized in that: at least any one of said front and rear connecting portions of said intermediate frame body is integrally two-color injection-molded with a second polymer resin material softer than a first polymer resin material forming other portions of the intermediate frame body.

A closed cable drag chain ~~according to claim 2~~ further solves the above-mentioned problems by that fact that at least any one of said front and rear bend limiting end portions of said opening/closing lid member is integrally two-color injection-molded with a second polymer resin material softer than a first polymer resin material forming other portions of the opening/closing lid member ~~in addition to the configuration of claim 1~~.

Further, a closed cable drag chain ~~according to claims 3 and 4~~ further solves the above-mentioned problems by the fact that at least a groove bottom portion of the cable holding groove is integrally two-color injection-molded with said second polymer resin material ~~in addition to the configuration according to claims 1 and 2, respectively~~.

Further, a closed cable drag chain ~~according to claims 5, 6, 7 and 8~~ further solves the above-mentioned problems by the fact said outer frame is molded with said second polymer resin material ~~in addition to the configuration according to claims 1, 2, 3 and 4, respectively~~.

The two-color injection-molding in the present invention is a method in which on a primary layer molded by a usual injection molding is injected a

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As described above, in the closed cable drag chain ~~according to claim 1,~~ a number of intermediate frames comprising intermediate frame bodies provided with cable holding grooves inside and opening/closing lid members fitted to said cable holding grooves are articulately connected to each other, and removable outer frames are fitted to and covered on the connecting portions between the adjacent intermediate frames. Thus, scattering of the contact wear powder generated in holding and guiding an inserted cable or the like into operating space can be blocked. Thus, only the opening/closing lid member can be freely opened/closed at an upper position of the intermediate frame body irrespective of engagement and disengagement between the adjacent intermediate frames. Therefore, even after the drag chain was attached to a mobile machine such as a machine tool, an electronic device, a civil engineering machinery, a transfer system or the like, a cable or the like can be easily inserted into the drag chain to assemble it. As a result the cable or the like in a cable holding groove can be easily checked and repaired during its maintenance, as well as weight reduction can be attained.

Further, in the invention ~~of claim 1,~~ an upper open end surface, which is brought into the adjacent upper open end surface on the articulating outer peripheral side of the chain to hold a straightly extended position, and a lower open end surface, which is brought into contact with the adjacent lower open end surface while circulating on the articulating inner peripheral side of the chain while circulating to hold a required bent or articulated position, are formed in the intermediate frame body of the intermediate frame. Thus, when a cable or the like is caused to move together with a mobile portion of a machine, the lower open end surfaces of the intermediate frame bodies sequentially displace a portion exhibiting a required articulated position while mutually ensuring a required bending radius whereby the cable or the like can be reliably guided and moved. Further, in a mobile position where the adjacent intermediate frames do not need a required bending position, the inserted state of the cable or the like in the chain can be stabilized and held while the adjacent upper open end surfaces formed in the adjacent intermediate bodies of the intermediate frames maintains a straightly extended position.

Further in to the closed cable drag chain ~~according to claim 1,~~ at least any one of said front and rear portions in the connecting portions of said intermediate frame bodies is integrally two-color injection-molded with a second polymer resin material softer than a first polymer resin material forming other portions of the intermediate frame body. When the adjacent upper open end surfaces, which hold a straightly extended position, are sequentially brought into contact with each other on the articulated outer peripheral side of the chain, or when the adjacent lower open end surfaces, which hold a required articulation position, are sequentially brought into contact with each other on the articulated inner peripheral side of the chain while circulating, the connecting portion made of a soft second polymer resin material exhibits relative cushion action and sound-absorbing action. Accordingly, clattering sounds, which tend to occur in a conventional closed cable drag chain, are significantly suppressed so that one cause of the noise generation under operating environment can be removed. Further, since the fitting operation of a connecting portion between the adjacent intermediate frames exhibit flexibility by slight displacement of the members, assembling operation can be easily attained.

Further, in the closed cable drag chain ~~according to claim 2, in addition the effect of the invention according to claim 1,~~ at least any one of said front and rear bend limiting end portions of said opening/closing lid member is integrally two-color injection-molded with a second polymer resin material softer than a first polymer resin material forming other portions of the opening/closing lid member. Accordingly, the bend limiting end portions 112b of the opening/closing lid member 112 made of a soft second polymer resin material aid relative cushioning action and sound-absorbing action when the adjacent upper open end surfaces 111d for supporting a straightly extended position are brought into contact with each other on the articulated outer peripheral side of the chain. Thus, clattering sounds, which tend to occur in a conventional closed cable drag chain, are significantly suppressed so that one cause of the generation of noises under operation environment can be completely removed.

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Further, in the closed cable drag chain ~~according to claims 3 and 4, in addition to the effect of the invention according to claims 1 and 2, respectively,~~ at least a groove bottom portion of the cable holding groove provided in said intermediate frame is integrally two-color injection-molded with said second polymer resin material. Accordingly, when the adjacent lower open end surfaces of the adjacent intermediate frames are brought into contact with each other on the articulation inner side of the chain while circulating to hold a required articulation position, even if these contact or connecting portions form edges, they exhibit a soft cushioning action whereby early wear of a cover on a cable, hose or the like can be suppressed.

Further, in the closed cable drag chain ~~according to claims 5, 6, 7, and 8 in addition to the effect of the invention according to any one claims 1, 2, 3, and 4, respectively,~~ said outer frame is molded with the second polymer resin material. Accordingly, when the adjacent upper open end surfaces and the adjacent lower open end surfaces of the adjacent intermediate frames are brought into contact with each other respectively, outer frames, which are contact slidable so as to fit-cover a connecting space between the adjacent intermediate frames, suppresses sliding contact sounds, which tend to generate between the outer frame and the intermediate frame whereby one cause of the generation of noise under operating environment can be further resolved.

Description of Reference Numerals